SAVANNAH RIVER SITE

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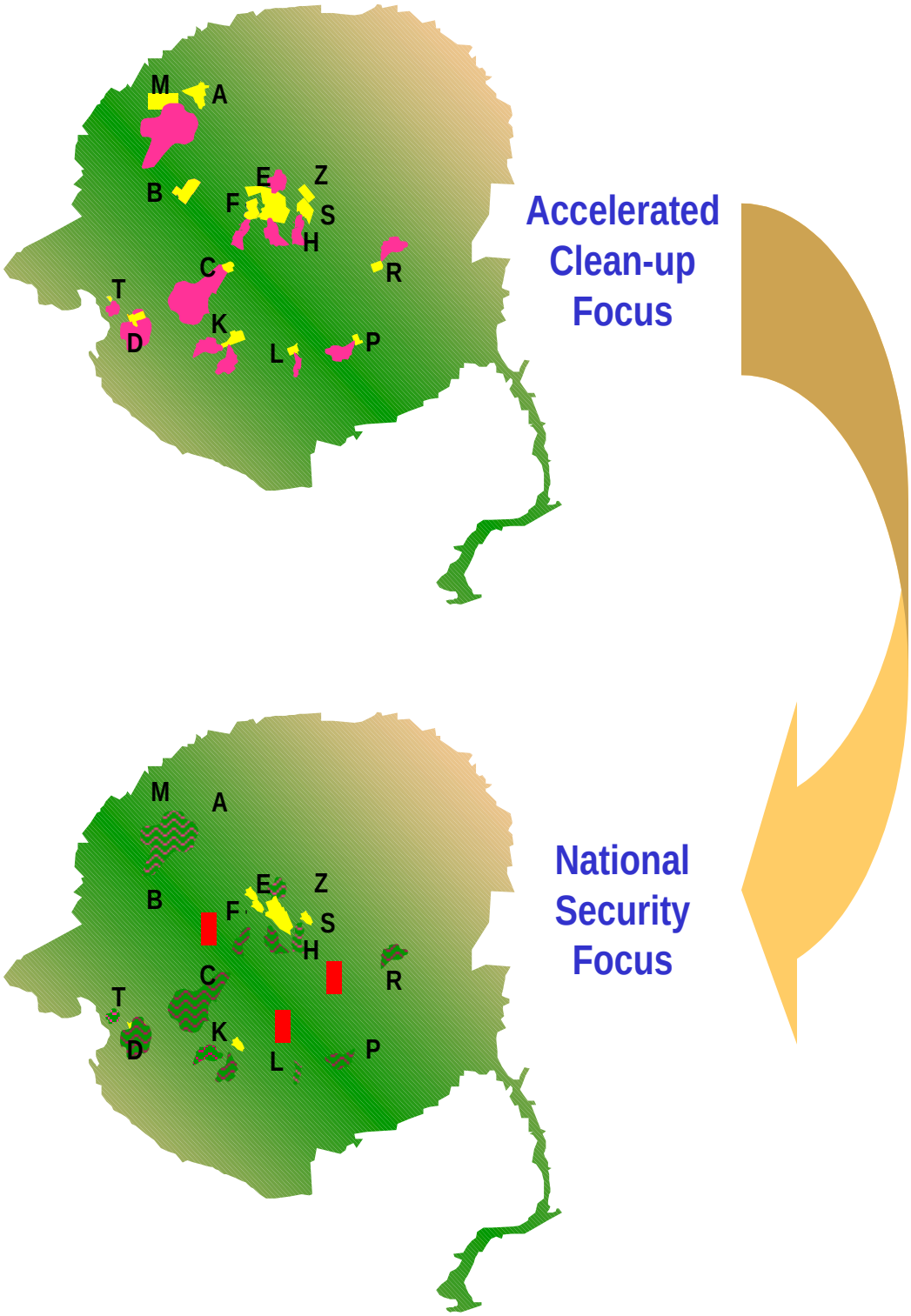
Environmental Management Program Performance Management Plan



This proposed Savannah River Site Environmental Management Program (EM) Performance Management Plan has been submitted to the U.S. Department of Energy-Headquarters (DOE-HQ) and approved by Jessie Roberson, the U.S. Department of Energy Assistant Secretary for EM for discussion with the Office of Management and Budget in August 2002.

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Acronyms

AAM	Assistant Manager
Am / Cm	americium / curium
ARU	acid recovery unit
B&Rs	budget and reporting
BCP	baseline change proposal
CCTV	closed circuit television
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIF	Consolidated Incineration Facility
CLAB	Central Laboratory Facility
CMP	chemicals, metals, and pesticides
CMPC	classified matter protection and control
D&D	deactivation and decommissioning
DNAPL	dense non-aqueous phase liquids
DNFSB	Defense Nuclear Facilities Safety Board
DOE	Department of Energy
DOE-HQ	Department of Energy-Headquarters
DOE-SR	Department of Energy-Savannah River
DRR	Domestic Research Reactor
DU	depleted uranium
DUS	dynamic underground stripping
DWPF	Defense Waste Processing Facility
ECF	Entry Control Facility
EIS	Environmental Impact Statement
EM	Environmental Management
EPA	Environmental Protection Agency
ER	Environmental Restoration
ES&H	Environmental, Safety and Health
ESS	Essential Site Services
ETF	Effluent Treatment Facility
FFA	Federal Facility Agreement
FFTF	Fast Flux Test Facility
FRR	Foreign Research Reactor
FRR / DRR	Foreign Research Reactor / Domestic Research Reactor
FY	Fiscal Year
G&A	General and Administrative
GP	general purpose
GPRA	Government Performance Results Act
GPS	Global Positioning System

HCA	Head of the Contracting Authority
HEU	highly-enriched uranium
HLW	high-level waste
HP-52	HP-52 Pond
HRB	H-Area Retention Basin
HVAC	heating, ventilation and air condition
INEEL	Idaho National Engineering and Environmental Laboratory
IPABS	Integrated Planning and Budget System
KAMS	K-Area Materials Storage
LAN	local area network
LAW	low-activity waste
LCAM	Life Cycle Asset Management
LLNL	Lawrence Livermore National Lab
MARSSIM	Multi Agency Radiation Survey and Site Investigation Manual
MCLs	maximum contaminant limits
MCS	Management Control System
Mk	mark
MT	metric tons
MTRE	Material Test Reactor Equivalent
Na	sodium
Nci / g	Nanocuries / gram
NEPA	National Environmental Policy Act
NESHAPs	National Emission Standards for Hazardous Air Pollutants
NNSA	National Nuclear Security Administration
OPEX	operating expense
ORWBG	Old Radioactive Waste Burial Ground
OSTs	old solvent tanks
PBIs	Performance-Based Incentives
PBS	Project Baseline Summary
PCM&M	Post Closure Monitoring and Maintenance
PDCF	Pit Disassembly and Conversion Facility
PIP	Plutonium Immobilization Project
PMP	Performance Management Plan
PTSM	Principle Threat Source Material
Pu	plutonium
PUREX	Plutonium Recovery and Extraction
RBOF	Receiving Basin for Offsite Fuel
RCRA	Resource Conservation and Recovery Act
RFETS	Rocky Flats Environmental Technology Site
RODs	Records of Decision
ROSRS	Remotely Operated Size Reduction System

RW	Office of Civilian Radioactive Waste Management (DOE)
S&M	Surveillance and Maintenance
S/RID	Standards/Requirements Identification Document
SCDHEC	South Carolina Department of Health and Environmental Control
SFAS	Security and Fire Alarm System
SNF	spent nuclear fuel
SNM	special nuclear material
SR	Savannah River Operations Office
SRS	Savannah River Site
SRTC	Savannah River Technology Center
SST	safe secure transport
STP	Site Treatment Plan
SW	solid waste
TEC	total estimated cost
TPC	total project cost
TRU	transuranic
TSF	Treatment and Storage Facility
TVA	Tennessee Valley Authority
UCNI	Unclassified Controlled Nuclear Material
UL	Underwriters Laboratory
VOC	volatile organic compound
VPP	Voluntary Protection Program
WAN	wide area network
WIPP	Waste Isolation Pilot Plant
WP	Warner's Pond
WSRC	Westinghouse Savannah River Company

Executive Summary

The Savannah River Site (SRS) Cleanup Reform Vision is to accelerate completion of the Site's Environmental Management (EM) missions and transform SRS fully to a site focused on National Security. The SRS EM Program Performance Management Plan (PMP) outlines specific actions that the Department of Energy (DOE) is taking to accelerate the SRS cleanup program to 2030, while targeting an even more aggressive objective of achieving cleanup by 2025. The SRS Vision applies innovative cleanup reform approaches to accelerate both cleanup and risk reduction, reduce the life cycle costs of the EM program and enhance Homeland Security.

Accelerating cleanup at SRS will be achieved through implementation of the following three strategies:

- Accelerating the mitigation and elimination of risks through treatment and disposition of nuclear materials and waste and addressing hazards of contaminated sites and excess facilities
- Reducing the high carrying costs associated with maintaining large, complex nuclear facilities in a safe condition through accelerated deactivation and, where warranted, complete decommissioning
- Driving down the cost of doing business through a comprehensive review of activities, requirements and procedures for value added against a safe mission essential standard and adopting a closure mentality for facilities and operations with near-term completions

This plan outlines the approach that will be taken to achieve accelerated cleanup, specific roles and responsibilities for all parties involved, and establishes discrete project plans with clear milestones and deliverables to enable success, recognizing that future policy decisions, such as those made under the National Environmental Policy Act (NEPA), will be incorporated into the execution of the SRS accelerated cleanup program. This document establishes lines of accountability and will serve as the basis for monitoring progress and measuring success of the accelerated cleanup program at SRS.

The benefits of this accelerated cleanup initiative include:

- Reducing the cost of SRS cleanup by $8 to $12 billion;
- Shortening the cleanup schedule by 15 years or more; and
- Eliminating essentially all EM Program health, safety, environmental and security risks in half the time.

Further, the SRS Vision supports DOE Complex goals by providing a means for secure and cost effective consolidation of nuclear materials from other sites, providing a credible disposition path for plutonium and spent nuclear fuel, and supporting the early closure of other sites in the Complex. As noted in the table below, the benefits of the SRS Cleanup Reform Vision are significant, and include a dramatic reduction in the cost of the EM program (represented below in current year dollars with Long-Term Stewardship costs included through 2050 for both cases). The benefits are:

SRS Today	SRS Cleanup Reform Vision
➢ Complete High Level Waste (HLW) Project by 2039 ➢ Produce 6000 HLW Canisters	➢ Complete HLW Project by 2020 ➢ Produce 5000 HLW Canisters
➢ 2 Canyons are Operating ➢ 3 Spent Nuclear Fuel (SNF) Storage Basins Operating ➢ No Disposition Path for Complex Nuclear Materials Exists	➢ 1 Canyon Operating after 2006-2007 ➢ 1 SNF Storage Basin Operating after 2004 ➢ Complex-wide Consolidation and Post-Canyon Materials Management Capability Exists (Storage, Stabilization, Surveillance, Disposition)
➢ Complete Shipments of Legacy Transuranic (TRU) Waste by 2034 ➢ Incineration of Legacy Plutonium Recovery & Extraction (PUREX) Waste Planned	➢ Complete Shipments of Legacy TRU Waste by 2013 ➢ Alternate Treatment Technology for Legacy and F Canyon PUREX Waste Available
➢ Final Environmental Restoration (ER) Remedy Construction in 2037	➢ Last Groundwater Record of Decision by 2023 with Project Construction by 2026
➢ Broad Footprint/Containment to Protect with In-Depth Defense	➢ Upgraded, Robust, Consolidated, Security Posture
➢ Minimal Cash Flow to Maintain Safe Facility Conditions	➢ Business-Based Deactivation and Decommissioning (D&D) Implemented
➢ EM Program Costs through 2050 ~ $40-45	➢ EM Program Costs through 2050 Reduced by $8-$12billion

To implement the SRS Vision, an incremental investment from Fiscal Year 2003 (FY03) to FY08 is required, which will yield significant returns:

- Completing the high level waste processing up to 8 years sooner and completing all HLW project activities 20 years sooner while producing 1,000 fewer canisters (15% reduction).
- Accelerated completion of nuclear materials stabilization, including deactivation by 2006-2007 of F Canyon and FB-Line while enabling continued longer-term nuclear materials management at SRS. Along with the acceleration of high level waste

disposal, this Plan provides an accelerated closure-project approach to the F-Area separations and F-Area high level waste tank operations.
- Consolidation of the Site's three spent fuel storage basins into one by 2004.
- Accelerated reduction of environmental risk in the Site's groundwater cleanup and solid waste programs. This includes expedited shipment of legacy transuranic waste to the Waste Isolation Pilot Plant (WIPP) with program completion nearly 21 years earlier than the current plan.
- Enhanced and forward-looking safeguards and security capability. This responds to current and evolving security threat guidance. The safeguards and security capabilities will support the accelerated cleanup and security initiatives at SRS and across the Complex, as well as ongoing and future national security missions.
- An integrated facility deactivation and decommissioning program that will assure cost-effective and environmentally responsible reduction in the Site's industrial and nuclear facility footprint by over 567,000 square feet.

Accelerated cleanup at SRS clearly requires DOE-wide integration and cooperation to consolidate and disposition nuclear materials and to expeditiously transport transuranic waste to the WIPP.

Success also depends in part on key stakeholders. Our plan to achieve the above results will be pursued with deliberate engagement of local communities and stakeholders, including the appropriate regulatory authorities for SRS. The Environmental Protection Agency (EPA) Region IV and the South Carolina Department of Health and Environmental Control (SCDHEC) support accelerating cleanup and risk reduction, as demonstrated by a signed letter of intent.

Throughout the development of this PMP, stakeholders have been very involved. Several meetings were held with the full SRS Citizens Advisory Board (CAB), as well as meetings with the subcommittees. Both EPA and state regulators attend these meetings. SRS held three public meetings in local communities. All comments were reviewed, and changes to the PMP were made based on comments from members of the public, regulators, League of Women Voters, and other stakeholders. Citizens have been supportive of SRS proposals to further reduce risk and achieve results sooner.

SRS is already making significant progress on a number of initiatives that support DOE's accelerated cleanup objectives, most notably supporting the closure of the Rocky Flats and Mound sites. SRS is working collaboratively with regulators to find innovative, flexible ways to meet commitments. SRS is also implementing program strategies that represent breakthroughs from previous processes. These "breakthrough" strategies are being applied to such things as americium / curium (Am / Cm) disposition, the low curie salt program, natural environmental remediation, and other programs.

Fundamentally, the SRS Vision represents a shift from risk management to risk reduction / risk elimination. This shift will require major program reconfigurations and substantial changes in how the site does work—within both the DOE and contractor organizations— with special emphasis on identifying closure projects with risk-appropriate requirements.

FY03 represents a transition year as new modes of doing business and contract changes supporting this new approach are put in place and implemented.

This Plan identifies opportunities to reduce lifecycle costs significantly, freeing up resources to be reinvested to accelerate cleanup and reduce risks faster. This Plan also provides a basis for predictable, stable funding as progress is made to reduce risks and accelerate cleanup.

As the project plan for accelerated cleanup, this Plan will be maintained as a living document to drive accelerated cleanup and achieve our Cleanup Reform vision by 2025.

1.0 Purpose

This Performance Management Plan (PMP) describes the approach that will be taken to achieve accelerated cleanup of the Savannah River Site (SRS). The existing cleanup plan is not appropriately focused on risk reduction, which results in a cleanup program that costs too much and takes too long. SRS is resolute that changing the current approach to one which is focused on reducing risk and accelerating cleanup will enable the Site to complete its Environmental Management (EM) mission by as early as 2025. This will be accomplished by investing in and aligning resources to complete projects that pose the greatest risk and adopting new methods and ways of doing business to advance the cleanup program.

Investing in programs that hold the greatest opportunity for accelerating the cleanup schedule and the risk reduction profile will reduce the life-cycle cost of the EM program and enhance our national Homeland Security posture. SRS has identified unique strategies, described within this PMP, that not only establish a new closure approach for EM work at SRS, but also enable accelerated closure and risk reduction progress at other Department of Energy (DOE) sites. This PMP exhibits a strong emphasis on facility closure and project completion, which will be achieved by:

- Adopting a risk-based approach to defining work requirements;
- Applying a closure-oriented approach to requirements and activities, as appropriate;
- Applying commercial standards to projects wherever possible, and tailoring standards and requirements to the job;
- Maximizing the use of existing facilities and capabilities beyond their current use;
- Minimizing construction of new EM facilities;
- Subcontracting work when it can be done more cost-effectively;
- Removing requirements that actually inhibit cleanup progress or increase risk aversion;
- Integrating project activities across programs and sites to find the best approach; and,
- Measuring cleanup progress against results rather than processes.

With this focus, SRS can reduce the cost of SRS cleanup by $8 to $12 billion, reduce the cleanup schedule by 15 years or more, and eliminate essentially all of the EM Program health, safety, environmental and security risks in half the time originally planned. SRS is working closely with its regulators to develop implementation plans that result in dramatic and significant cleanup acceleration.

Recognizing the importance of accelerating risk reduction and project completion, SRS has already begun the process of implementing some of the strategic initiatives discussed in this PMP. Others will be implemented as soon as discussion with regulators are complete, National Environmental Policy Act (NEPA) and other documented decisions are updated, or as consolidation opportunities are accepted and authorized to proceed. While cleanup progress is already underway, SRS is committed to continuing to identify additional risk reduction and cleanup acceleration opportunities. SRS will work closely with its regulators, DOE Headquarters, other DOE sites, and other stakeholders to implement its accelerated cleanup plan and seek additional program improvements. This PMP will be updated as new opportunities to further accelerate the EM cleanup program arise. SRS will work aggressively to complete cleanup by 2025.

2.0 Background and Project Description

The Savannah River Site (SRS) is a key Department of Energy (DOE) industrial complex dedicated to the stewardship of the environment, the enduring nuclear weapons stockpile and nuclear materials. More specifically, the SRS processes and stores nuclear materials in support of the national defense and U.S. nuclear non-proliferation efforts. The Site also develops and deploys technologies to improve the environment and treat and dispose of nuclear and hazardous materials left from the Cold War. While the changing world has caused a downsizing of the Site's original defense mission, SRS's national commitment continues in several areas: reducing the nuclear danger, transferring applied environmental technology to government and non-government entities, cleaning up the site, and managing the waste produced.

This SRS Environmental Management (EM) Program Performance Management Plan (PMP) discusses the approach SRS will implement to accelerate the SRS EM Program to as early as 2025. The overall benefits of the SRS Cleanup Reform Proposal directly support the Calls to Action discussed in the EM Top-to-Bottom Review and provide for expedited cleanup, resulting in significant and early risk reduction, reduced costs, accelerated schedules and enhanced Homeland Security.

The groundwork for implementing Top-to-Bottom approaches has already been laid at SRS. Integrated Safety Management has been fully implemented. SRS is already supporting closure of other EM sites. SRS has established cooperative relationships with the regulators and has been recognized for the streamlining and accomplishments realized in the remediation program. SRS initially developed and offered this "Vision" concept early in Fiscal Year 2002 (FY02) and has continued to develop the details of our approach. Finally, the SRS emphasis on cost reduction is clear in the Contractor's commitment to achieve additional scope for hundreds of millions dollars less than the planned contract funding (FY01-FY06), along with the establishment and implementation of an active program to achieve even greater savings.

Over the last few years, SRS has made real progress in cleanup. More than 75% of the scheduled nuclear materials have been stabilized (109,042 of 143,315 items) and 42 of the 60 Defense Nuclear Facility Safety Board (DNFSB) commitments have been met. Additionally, SRS has received and stored the contents of 260 Spent Nuclear Fuel (SNF) casks from around the world, while at the same time continuing to deinventory the Receiving Basin for Offsite Fuel (RBOF) (currently 46% complete).

More than 1,300 high level waste (HLW) canisters have been produced, representing 21% of the total canisters expected to be produced to complete removal of the HLW from the storage tanks. SRS is the first site to successfully close HLW tanks. Forty-nine storage tanks containing 37 million gallons of high level waste remain for disposition. Volumetrically this quantity represents 40% of the DOE inventory while, radiologically, at 420 million curies, it represents 60% of the DOE inventory. Notable improvements have also been realized in the HLW system performance over the last year.

Shipments of transuranic (TRU) waste to the Waste Isolation Pilot Plant (WIPP) began last year and low-level waste is being sent to the Nevada Test Site, while other wastes are being sent off-site to Tennessee and Utah.

In the Environmental Restoration (ER) program, 306 of the 515 waste sites have been closed or have Records of Decision (RODs) in place. The established, productive relationship between SRS and its regulators sets the stage for additional enhancements to the ER project through the deployment of new technologies and streamlining the regulatory documentation process.

SRS was the first large site to receive the Voluntary Protection Program (VPP) Star Status, evidence of SRS's responsibility to operate safely in order to protect its workers and the public. SRS has consistently received satisfactory ratings on security reviews conducted by Department of Energy-Headquarters (DOE-HQ), an accomplishment that underscores the SRS commitment to secure operations.

2.1 Scope Statement

Building on the cleanup progress to date, SRS will implement additional reforms in order to achieve accelerated cleanup for remaining activities in accordance with its Cleanup Reform Vision. SRS Cleanup Reform will eliminate or defer work on low-risk activities and divert resources to complete cleanup work that reduces higher risk faster. Strong emphasis is placed on facility closure and project completion. SRS Cleanup Reform not only establishes a new closure approach for EM work at SRS, but also enables aggressive progress at other DOE sites, supporting their faster closure and risk reduction at lower costs.

In essence, the scope of this accelerated cleanup program involves completing the removal of waste from all SRS high level waste tanks and closing all the tanks; completing nuclear materials stabilization and processing in the SRS canyons and separations facilities; consolidating and dispositioning SNF; safely treating and disposing of solid wastes; remediating groundwater plumes and soil contamination; and deactivating and / or decommissioning inactive SRS facilities.

SRS will complete cleanup, virtually eliminating the risk and deactivating the majority of facilities at SRS, by 2025. The Site will:

- Process nearly 37 million gallons of high level waste into 5,000 canisters
- Close 51 high level waste tanks (two tanks closed to date)
- Disposition 12 tons of plutonium-bearing materials
- Receive up to 25,000 Material Test Reactor Equivalent (MTRE) elements
- Process Foreign Research Reactor / Domestic Research Reactor fuel in H Canyon on a not-to-interfere basis
- Ship 10,400 cubic meters of TRU to the WIPP
- Treat 97,000 gallons of Plutonium Recovery and Extraction (PUREX) waste

- Remediate 515 ER waste sites
- Deactivate 5 reactors, 2 canyon facilities, and 2 fuel fabrication facilities
- Deactivate and / or decommission facilities where no future facility use or mission is planned

This PMP provides summary-level, as well as detailed information for the fourteen unique strategic initiatives that make up the SRS Cleanup Reform Proposal and discusses the results that will be realized. They will be accomplished through the implementation of EM's Top-to-Bottom philosophies, which will help to eliminate barriers and inefficiencies that impede cleanup progress. The fourteen initiatives are as follows:

- WM-1, Expedited HLW Processing
- WM-2, Expedited Risk-Based Tank and Facility Closure
- MM-1, Accelerated Nuclear Material Facilities Consolidation and Deactivation
- MM-2, Enhanced SNF Disposition
- MM-3(C), Optimize Disposition of Complex-Wide Plutonium Bearing Materials
- WM-3, Expedite TRU Waste Shipments to the WIPP
- WM-4, Accelerate Risk Reduction through Expedited Management of High Activity TRU Waste
- WM-5, Cost Effective / Risk-Reducing Alternative to Incineration for PUREX Waste
- REM-1, Accelerate Closure of the Old Radioactive Waste Burial Ground
- REM-2, Accelerate Contaminant Reduction in Fourmile Branch Stream
- REM-3, Accelerate Risk Reduction Through Innovative Technologies and Improved Regulatory Processes
- DD-1, Accelerate Facilities Disposition
- SS-1, Accelerate Required Improvements to General Site Security Infrastructure
- SS-2(C), Centralize Alarm Services at SRS

SRS is positioned to satisfy EM priorities to accelerate cleanup not only at the SRS, but also throughout the DOE Complex. Implementing the facility disposition approach described in Section 3 and the strategic initiatives discussed in Section 4 will result in significant risk reduction, lifecycle cost savings and schedule acceleration for DOE. SRS is aggressively moving forward to accelerate the SRS cleanup program. Many of the activities associated with the strategic initiatives in this PMP are already underway; others will be implemented with concurrence and Cleanup Reform funding support from DOE-HQ.

This SRS EM Program PMP describes the framework to achieve accelerated cleanup and risk reduction more cost-effectively. The PMP includes the objectives of SRS Cleanup Reform, as well as the scope, schedule, roles and responsibilities, milestones, end state descriptions, long-term stewardship assumptions, success metrics, and actions required to achieve cleanup by as early as 2025. The vision for interim and final end states and the approach to achieve these end states are discussed in Section 3. An integrated project schedule and a responsibility assignment matrix are contained in Section 8 and 9, respectively. This schedule and responsibility assignment matrix include technical and implementation details. Details of funding requirements and assumptions are discussed in Section 5. The SRS Baseline Management approach, including roles and responsibilities; baseline definition and description; performance-based incentives; change control and performance monitoring; evaluation and reporting; and the risk management process is contained in Section 6.

As progress is realized and additional cost and schedule improvements are achieved, the PMP will be adjusted through formal change control, as appropriate. Implementing breakthrough approaches to site operations and business activities will result in additional streamlining and acceleration. Continuous improvement will continue to be emphasized at SRS as implementing new processes and improvements will be a critical effort to further accelerate risk reduction.

2.2 Planned vs. Accelerated Scope

Accelerating risk reduction, with a continued strong emphasis on protecting the environment and the health and safety of the workers and the public, is a primary objective of the SRS Cleanup Reform Proposal. With this aggressive focus on reducing risk as quickly as possible, SRS will complete cleanup work nearly two decades earlier than originally planned and at lifecycle savings of $8-12 billion.

Figure 2.1 below clearly depicts the advantages of aggressively pursuing SRS Cleanup Reform.

Figure 2.1 SRS Today vs. SRS Cleanup Reform Vision

SRS Today	SRS Cleanup Reform Vision
➢ Complete HLW Project by 2039 ➢ Produce 6000 HLW Canisters	➢ Complete HLW Project by 2020 ➢ Produce 5000 HLW Canisters
➢ 2 Canyons are Operating ➢ 3 SNF Storage Basins Operating ➢ No Disposition Path for Complex Nuclear Materials Exists	➢ 1 Canyon Operating after 2006-2007 ➢ 1 SNF Storage Basin Operating after 2004 ➢ Complex-wide Consolidation and Post-Canyon Materials Management Capability Exists (Storage, Stabilization, Surveillance, Disposition)
➢ Complete Shipments of Legacy TRU Waste by 2034 ➢ Incineration of Legacy PUREX Waste Planned	➢ Complete Shipments of Legacy TRU Waste by 2013 ➢ Alternate Treatment Technology for Legacy and F Canyon PUREX Waste Available
➢ Final ER Remedy Construction in 2037	➢ Last Groundwater Record of Decision by 2023 with Project Construction by 2026
➢ Broad Footprint/Containment to Protect with In-Depth Defense	➢ Upgraded, Robust, Consolidated, Security Posture
➢ Minimal Cash Flow to Maintain Safe Facility Conditions	➢ Business-Based Deactivation and Decommissioning (D&D) Implemented

Reaching these EM end state results by 2025 will require the implementation of the SRS Cleanup Reform in the very near term. Through near-term implementation, SRS cleanup and risk reduction progress will begin to be realized almost immediately.

For instance, by the end of Fiscal Year 2003 (FY03), SRS will:

- Deactivate TNX and D Areas
- Implement the use of new frit at the Defense Waste Processing Facility which will allow increased waste loading in each HLW canister and support increased canister production rates
- Initiate Low Curie Salt Disposition
- Receive for storage all designated Rocky Flats materials (approximately 2,000 items)
- Complete repackaging of Rocky Flats classified metal
- Disposition Depleted Uranium (Du) Oxide in 728-F and 730-F
- Transfer Americium / Curium (Am / Cm) to HLW
- Initiate F Canyon Deactivation and reduction of surveillance and maintenance (S&M)
- De-inventory approximately one metric ton of SNF and deactivate K-Basin
- Achieve the ROD to close the Old Radioactive Waste Burial Ground (ORWBG), resulting in a safe and cost-effective remedy that reduces total risk to the environment, public and workers, while leaving 600,000 curies of waste (similar to Idaho National Engineering and Environmental Laboratory's Pit 9 waste) in place
- Obtain National Environmental Protection Act (NEPA) decision to begin disposition of foreign research reactor / domestic research reactor (FRR / DRR) in H Canyon as early as FY03
- Complete NEPA process to select an alternative Pu disposition option

By the end of FY06, SRS will:

- Disposition 2,300 canisters of HLW glass (46%) and 17 million gallons of salt solution (20%)
- Close two additional HLW tanks
- Complete de-inventory of approximately 20 metric tons of SNF and deactivate the RBOF
- Complete Plutonium packaging of approximately 1,000 3013 containers
- Complete shipment of 16,000 drums (60% of total inventory) of low-activity TRU waste to WIPP
- Issue Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) ROD and complete definitive design for four high-risk ER waste sites
- Complete Dynamic Underground Streaming at M Basin, removing over one million pounds of solvents from groundwater
- Decommission T, D, and M Areas
- Reduce the EM Facility Footprint by more than 567,000 square feet
- Complete receipts of all additional Complex-wide nuclear materials for consolidated storage (up to 6,900 shipping containers)
- Obtain NEPA decision identifying long-term disposition option for SNF

By the end of FY08, SRS will:

- Disposition 2,700 canisters of HLW glass (54%) and 28 million gallons of salt solution (33%)
- Complete installation of long-term 3013 container packaging / surveillance capability in an existing facility
- Deactivate F Canyon / FB-Line including de-inventory of FB-Line vaults
- Maintain integrated nuclear materials management programs by completing current milestones in addition to the new initiatives (e.g., complete processing of unirradiated Mark [Mk]-22 fuel assemblies)
- Complete shipment of 24,000 drums (~90% of total inventory) of low-activity TRU waste to WIPP
- Achieve closure of the Old Radioactive Waste Burial Ground (ORWBG)
- Reduce tritium flux to Fourmile Branch Stream by 70%

SRS performance toward meeting these objectives will be tracked and documented using the Performance Expectations / Metrics that are listed in the Strategic Initiatives in Section 4.2. Through active performance evaluation and measurement, SRS will stay on track to achieve EM Cleanup by 2025.

2.3 EM Completion Strategy

A focus on completing the SRS EM Program and reducing the lifecycle costs of operations will require changes not only in how projects are currently sequenced and scheduled, but also in currently planned approaches to cleanup. For example, in the High Level Waste Project, using a new frit in glass production and filling the canisters in a higher level will allow ~25% more glass to be placed in each canister, reducing the total number of canisters produced from 6,000 to 5,000.

The SRS Cleanup Reform Proposal also promotes the consolidation of DOE nuclear materials, enabling the Department to accelerate the closure of other sites within the Complex, as well as providing for enhanced Homeland Security. With the cancellation of the Plutonium Immobilization Project (PIP), plutonium-bearing materials across the DOE Complex no longer have an assumed disposition path. However, consolidating and dispositioning these materials at SRS is expected to save on the order of $2 billion at other locations where these materials are now “stranded” and provide DOE with a coordinated plan for managing these materials with improved national security.

Adopting a Closure Facility Approach is fundamental to achieving accelerated cleanup and risk reduction. SRS is in the process of applying a Safe Mission Essential concept to its programs and activities to appropriately align requirements with work to be accomplished. Aligning risk-based requirements to closure activities will ensure that facilities undergoing closure within the next decade will be closed both safely and cost-effectively on an expedited basis. For instance, tailoring Standards Requirements Identification Document (S / RID) requirements in the SRS ER program has significantly streamlined the ER operations and organization. Expanding this approach to other cleanup activities at SRS will result in further savings and schedule acceleration.

Designating SRS as a Long-Term National Security Site will provide a clear commitment that SRS will be maintained under institutional control for an extended period of time. With such a designation from Congress and / or treatment by DOE, the regulatory agencies and oversight groups, the State of South Carolina and the taxpayers will be assured that ownership and long-term stewardship of the SRS will be in the hands of

the federal government for the foreseeable future. This "guarantee" will aid SRS in its determination of appropriate end states for the EM facilities and projects. This will allow SRS to close facilities without returning these areas to "greenfield" conditions, which is expected to significantly reduce SRS closure costs. In addition, this approach would provide continued assurance that the public health and safety would be fully protected.

Specific program benefits realized from completing the SRS EM Program are significant. The HLW Project is completed about twenty years early and produces 17% fewer HLW canisters. The deactivation of the F Canyon and FB-Line chemical processing facilities is accelerated so that only H Canyon and HB-Line remain operational after 2006-2007. SRS will consolidate SNF from 3 storage basins to a single storage basin after 2004. SRS Cleanup Reform provides for Complex-wide consolidation and management of nuclear materials, including storage, stabilization, surveillance and disposition. The legacy TRU waste will be shipped to the WIPP nearly two decades ahead of schedule. Not only is the costly incineration of legacy PUREX wastes avoided, but the alternative treatment selected for this waste will also treat the PUREX waste from F Canyon by 2009. The ER project is accelerated from 2037 to 2026 for completion of the last scheduled remedial system. Safeguards and Security improvements provide DOE and the nation with an upgraded, robust, and consolidated Homeland Security posture. Inactive facilities are responsibly and effectively deactivated to eliminate on-going costs associated with surveillance and maintenance. Finally, SRS Cleanup Reform implements a business-based approach for deactivation and decommissioning of facilities.

Several of these SRS accelerated cleanup initiatives are already underway, such as expediting HLW sludge processing, low curie salt disposal and the F-Canyon Suspension Project. Additional initiatives are ready to be implemented but require some action, such as a regulatory approval or a DOE-HQ decision, prior to implementation. Finally, several of the initiatives require additional evaluation prior to a decision to implement.

2.4 Risk Reduction and Cleanup Strategy

SRS's strategic approach to cleanup reform is based on three primary thrusts:

- to accelerate mitigation / elimination of risks through treatment and disposition of nuclear materials and waste and addressing hazards of contaminated sites and excess facilities,
- to reduce the high carrying costs required to maintain large, complex nuclear facilities in a safe condition through accelerated deactivation and, where warranted, complete decommissioning, and
- to drive down the cost of doing business through a comprehensive review of activities, requirements and procedures for value added against a standard of "safe mission essential" and adopting a closure mentality for facilities that are approaching the end of their mission.

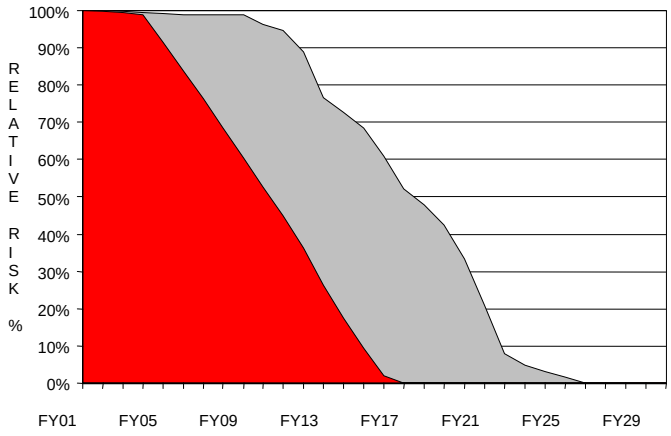
All EM programs at SRS were challenged to re-define the fundamental problems to enable new solution sets, considering the conclusions of the Top-to-Bottom review, Cleanup Reform, EM principles and the key thrusts described above. Program specific proposals were evaluated based on how effectively they met these objectives.

The magnitude of the cleanup challenge at SRS results in the need for a sustained, high-energy program lasting several decades. Significant near-term investment is needed to realize the substantial risk and cost reduction objectives of the cleanup reform initiative. Through the three-pronged strategic approach, SRS believes it has achieved an appropriate balance between reducing lifecycle risk and cost, reduction in nearer term carrying costs, and near-term investment. For example, acceleration of the HLW program will result in substantial lifecycle risk and cost reduction by adopting a fundamentally different approach to salt disposition and tank closure. Accelerated deactivation of F-Area operational facilities and spent fuel storage facilities will result in significant near term reduction in carrying costs for these high cost facilities. For example, deactivating F Area by FY07 instead of the currently scheduled FY12 will realize a net savings of approximately $475 million during this time frame, while accelerating the deactivation of the RBOF will save $35 million in lifecycle costs.

Ultimately, the pace of cleanup execution will be dependent on both SRS's ability to drive performance improvement and the resources invested in cleanup acceleration. SRS will continue to explore innovative opportunities to accelerate cleanup as well as integrated program planning to optimize utilization of resources invested by Congress to support the cleanup reform initiative.

Consistent with the intent of the Cleanup Reform Appropriation, this Plan describes an approach that will significantly reduce risk at SRS as the EM Program is completed. In fact, the substantial risk reduction achieved by implementing the SRS Cleanup Reform Proposal is the greatest advantage of this proposal. As depicted in Figure 2.2, SRS's risk is virtually eliminated eight years ahead of schedule. This reduction was determined through a study that analyzed the amount of materials stored or scheduled for processing in individual facilities across the site and comparing that risk to those of the program described in this Plan.

Figure 2.2 SRS Cleanup Reform Vision Expedites Risk Reduction and Improves Homeland Security



In order to complete the cleanup by 2025, SRS has assumed the following:

- Use of performance and risk-based definitions for high level wastes in DOE Order 435.1
- Designation / treatment of SRS as a National Security Site to drive cleanup end state expectations
- Re-issuance of National Environmental Policy Act (NEPA) RODs that support SRS approaches for Spent Fuel Management, Waste Management, Plutonium Disposition, etc.
- Capability to ship to federal repositories on accelerated schedules defined in this Plan
- Effective integration across various DOE programs, such as EM, National Nuclear Security Administration (NNSA), Office of Civilian Radioactive Waste Management (RW), etc.
- Implementation of risk-based closure strategy for designated facilities and operations
- Implementation of tailored requirements, appropriate to facility status and risks
- Funding to support accelerated cleanup objectives
- Consolidation of EM Cleanup funding into a reduced number of appropriation accounts (preferably one) and relief under the line item construction projects that would increase SRS's flexibility to move funds into and out of such projects
- Workforce restructuring flexibility to enable cost-effective execution of this PMP
- Regular communication and collaboration between SRS and DOE-HQ and among SRS and other DOE sites to define and resolve issues and facilitate cleanup progress, benchmarking and lessons-learned

Additional discussion pertaining to these and other assumptions are contained in the descriptions of the strategic initiatives in Section 4 of this PMP. In addition, general and programmatic assumptions and the risk management approach is discussed in Section 6.3.

3.0 Environmental Management End States

The Savannah River Site (SRS) Cleanup Reform Vision completes the Site's Environmental Management (EM) mission as early as 2025 and transitions SRS to a site focused on national security. This section:

- presents the end state vision of watersheds and inactive facilities at the time of turnover to a new landlord with continuing national security missions;
- describes SRS's efforts to develop an EM End State Plan to refine this vision and to obtain buy-in from the Department of Energy-Headquarters (DOE-HQ), as well as regulators, the community and other stakeholders;
- discusses the requirements for Post Closure Monitoring and Maintenance, and
- outlines the actions required to reach the EM End State.

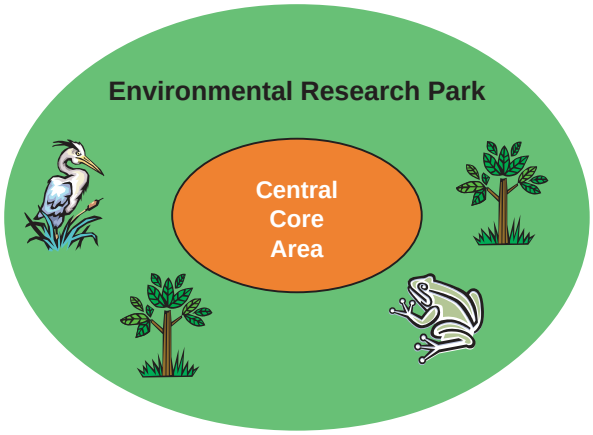
3.1 SRS EM End State Vision

The SRS End State Vision concentrates operations toward the center of the site to form a central core area with continuing national security missions. This central core area will be surrounded by an environmental research park, which will provide a buffer zone between the central core area and the public. Most facilities in the buffer zone will be decommissioned with minimal requirements for Post Closure Monitoring and Maintenance. The entire site will continue to be completely under federal control with no recreational or residential use.

As the EM program missions are completed and the SRS Cleanup Reform Vision is attained, SRS will have undergone substantive changes from the multiple-area operating site of today. All the inactive SRS reactor facilities will be deactivated, with some of the ancillary reactor area facilities removed and others such as the disassembly basins grouted in place and covered with a low permeability soil cap. The EM nuclear materials will be stabilized, processed and turned over to a non-EM mission for future commercial use or shipped to a Federal repository for disposal. The inactive separations facilities will be deactivated or decommissioned. Any reactor and separations facilities with other mission use will be transitioned from the EM program to the new mission owner or Site landlord. All high level waste (HLW) will be removed from the HLW tanks and vitrified, and the 51 waste tanks will be filled with grout. All the HLW canisters will be shipped to the Federal repository. HLW processing facilities will be deactivated and their canyon cells filled with grout. All legacy transuranic (TRU)

waste will be removed from SRS and shipped to the Waste Isolation Pilot Plant (WIPP) and all legacy Plutonium Recovery and Extraction (PUREX) waste will be treated. All 515 SRS waste site and contaminated groundwater remediation projects will be completed with remedial action decisions implemented.

At the time of turnover to long-term stewardship, operations will be concentrated toward the center of the site to form a central core area with continuing national security missions. This industrialized core area will be surrounded by an environmental research park, which will provide a buffer zone between the central core area and the public. The entire site will be completely under federal control with no recreational or residential use.



SRS EM End State Vision

The SRS EM End State Vision is:

- **Facilities outside the central core area** will be either deactivated to an appropriate condition for long-term (decades) storage, or decommissioned. For example,
  - T, D and M Area Facilities will be decommissioned.
  - A-Area Administrative Facilities will be decommissioned and the Savannah River Technology Center (SRTC) mission will continue to support the enduring SRS missions in a significantly reduced footprint or in a new research and development facility located in the industrialized core area of the Site.
- **Facilities within the central core area** will be turned over for National Security mission related operations, deactivated to an appropriate condition for long-term (decades) storage, or decommissioned.
  - K-, P- and R-Reactor Buildings will be deactivated and the disassembly basins will be stabilized (grouted). Ancillary buildings will be decommissioned.
  - C-Reactor Building will continue to provide decontamination and waste management services for the Site's continuing missions. The C-Reactor disassembly basin will be stabilized (grouted), and ancillary buildings will be decommissioned.
  - L-Reactor Building will provide storage and receive spent nuclear fuel (SNF) from non-EM government entities; some L Area ancillary facilities will continue to support the fuel operations, however these facilities will be owned and operated by non-EM entities.
  - In the Separations Areas, the nuclear materials processing facilities (Canyons and B-Lines) and HLW tanks will be deactivated; Tritium operations and some

administrative facilities will continue to support national security missions; and, the remaining administrative facilities will be decommissioned.
  - During deactivation planning, all hardened facilities will be considered for alternative waste disposition facilities.
- **Environmental Remediation Program end states** for the Site's soil, surface water, and groundwater cleanup projects will be developed on a watershed-by-watershed basis and will be consistent with the SRS Strategic Plan, the Federal Facilities Agreement (FFA), the SRS Land Use Control Assurance Plan, and the SRS Long Range Comprehensive Plan. By 2026, waste sites with a risk to surface water or groundwater will be remediated and controlled, and impacted groundwater will be in final remediation or in monitoring. Sites with no risk to groundwater will be under institutional control, using surveillance, maintenance, and monitoring.

3.2 SRS EM End State Plan

SRS has initiated development of an EM End State Plan to establish a process and criteria to determine the end states appropriate for long-term (decades) lay-up with minimal risk and minimal cost for Post Closure Monitoring and Maintenance (PCM&M). SRS intends to obtain buy-in among DOE-HQ and Department of Energy-Savannah River (DOE-SR), appropriate regulatory bodies and other stakeholders will be obtained in Fiscal Year 2003 (FY03). The plan will define the EM end state for facilities, the environment and waste sites. It will take into consideration existing documents such as the SRS Strategic Plan, SRS Land Use Control Assurance Plan and the SRS Long Range Comprehensive Plan. This End State Plan will form the basis for establishing the technical and financial baseline for establishing the EM end state conditions for turnover.

Even though SRS is predominantly an EM site, it has historically been recognized as a site with continuing and new missions. Accordingly, the facilities disposition program has focused on managing risk in inactive facilities with minimal expenditures as opposed to eliminating risk with consideration for minimizing life cycle cost. It is obvious that this approach requires re-evaluation in accordance with the objectives of the SRS Cleanup Reform Vision. The SRS EM End State Plan will define minimum Deactivation and Decommissioning (D&D) requirements and activities necessary to establish acceptable end state conditions for all inactive areas and facilities. It will also establish a model and a process to define additional D&D requirements for specific facilities based on defined economic, risk and programmatic considerations.

3.3 PCM&M Approach

PCM&M activities will be developed to provide cost effective protection of the public and the environment. The planning will consider the advanced technologies being developed by the Long-Term Stewardship Program in the areas of: Contamination Containment and Control; Monitoring and Sensors; Decision Making and Institutional Performance, and Safety Systems and Institutional Controls.

PCM&M activities will be performed on all deactivated facilities until they are decommissioned. In order to minimize the cost of PCM&M, surveillances will be minimized and a Team Based approach will be utilized.

A Surveillance and Maintenance (S&M) Plan will be prepared in accordance with the SRS 1C Facilities Disposition Manual, which provides an implementing procedure for DOE's Implementation Guide for S&M during Facility Transition and Disposition. The S&M Plan will implement the minimum surveillances necessary to satisfy safety basis documentation requirements and prudent engineering judgement based on the condition of each individual facility and its associated risk.

Surveillances identified in the S&M Plan will be performed via a multidisciplinary subject matter expert team. The team approach will minimize the cost of surveillances while increasing their effectiveness. The reduced frequency of inspections will greatly decrease the number, and therefore the cost of entries. The use of a multi-disciplined team to conduct the inspections will improve the quality of the review process and provide a much better overview of the changing conditions within deactivated facilities. The team surveillances will yield valuable information to better perform out-year budget planning by prioritizing corrective maintenance activities based on facility degradation benchmarking.

Using surveillance, maintenance and monitoring techniques, SRS will determine with the regulators, the negotiated points of compliance and the watershed risk criteria that will further ensure end state performance expectations contained in respective Records of Decision (RODs) for soil and groundwater.

3.4 Actions Required for Implementation

SRS is developing the EM End State Plan and will begin the process of obtaining buy-in from stakeholders in FY03. The SRS Facilities Disposition procedure manual is also being revised to include decommissioning procedures into the Facilities D&D Program.

The Facilities D&D Program will work with operating facility personnel within the central core area of the site to develop D&D plans for candidate facilities identified in the model. The revised requirements for early integration of the facilities disposition program and operating programs will be implemented to integrate facilities disposition and Environmental Restoration (ER) Program requirements into shutdown planning of operating facilities. Similarly, the ER Program will coordinate and integrate characterization and planning efforts with the Facilities D&D Program's Plans.

To implement the EM End State Plan, incremental funding, as yet to be determined, will be required beyond what is identified from FY04 through FY08 in Strategic Initiative DD-1, "Accelerate Facilities Disposition". As additional incremental funding is made available, the Site will implement its SRS EM End State Plan to achieve the agreed-to end state appropriate for long-term stewardship.